to be frequent, 45 cases having been observed in two and one-half years. (In Philadelphia the disease, beyond an occasion of epidemic in a children's asylum, is not only rare, but ill-developed as to the individual lesions, most of them being small and imperfectly formed. —L. A. D.)

Dermatitis Exfoliativa Treated with Quinine.—W. H. Mook (*Journal of Cutaneous Diseases*, September, 1910) directs attention to the value of quinine in full doses in this well-known, but uncommon, disease. A case is reported in which it succeeded in effecting a cure on two occasions, five-grain capsules of the hydrochlorate (preferred to the sulphate), four or five times daily, being prescribed. The author had previously reported 6 cases successfully treated by the same method. No local treatment was used. (It is questionable if cases, such as the one here reported, should not rather be diagnosticated and designated as pityriasis rubra than dermatitis exfoliativa. But irrespective of this point, the therapeutic note given is distinctly valuable.—L. A. D.)

Eucarin, a New Emollient.—G. H. Jackson (*Journal of Cutaneous Diseases*, June, 1910, p. 294) reports favorably of this new medicament emanating from Dr. Unna, of Hamburg. It is made of vaseline, acted upon by a substance obtained from wool-fat, which it is claimed takes up a large amount of water, and is in consequence a very cooling ointment. Unna found it useful in ichthyosis, and Jackson, excellent for various forms of cutaneous disease in which the skin was dry. Thus it is useful in chapped hands and similar conditions of the skin. He usually combined it with cold cream ointment, about ʒiij to ℥j, which proportions make a desirable ointment. It is useful upon the scalp in cases where a distinctly greasy application is not desired. It does not become rancid.

PATHOLOGY AND BACTERIOLOGY

UNDER THE CHARGE OF

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The Cultivation of the Leprosy Bacillus.—Clegg (*Philippine Journal of Science*, 1909, iv, 77 to 79, 403 to 415) based this work upon the assumption that the leprosy bacillus derives its nutrition from the products of the tissue cells and the cells of the lesions in which it is encountered. Since this bacillus occurs so frequently within the protoplasm of these cells, a unicellular organism was selected which could be cultivated and which corresponded in a degree to the living tissue cells; that is, an organism which contained both nucleus and protoplasm. The amœba is readily grown upon artificial culture media and further fulfils the other requirements. The method for obtaining cultures of the leprosy bacillus was essentially as follows: The amœba were isolated from water by adding 1 c.c. of alkaline bouillon to every 100 c.c. of the water in question. After twenty-four to forty-eight hours the surface was examined and if the amœbæ were present a loopful of the surface water containing the amœbæ was transferred to the surface of agar in a Petri dish which had been previously inoculated with cholera vibrios. The amœba-cholera culture was then transferred to the surface of agar slants and after twenty-four hours inoculated with the suspension of leprosy material. These slants were incubated for seven days at body temperature, and the growth transferred weekly to fresh slants. At the end of from four to six weeks, acid-fast organisms were obtained in pure culture by heating the "pure-mixed" culture of the cholera amœba-leprosy to 60° C. for 30 minutes. The acid-fast organisms survived this heating, while the amœba and cholera vibrios were killed. These acid-fast organisms grew readily when transplanted to plain agar and other media. The organisms stained in a characteristic manner by the Ziehl-Nielson method. In order to prove that these organisms were not tubercle bacilli, considerable amounts of the pure culture were inoculated subcutaneously into guinea-pigs. A week later an indurated nodular thickening appeared at the site of inoculation in some of the guinea-pigs. In four weeks the lesions spread over the abdominal walls, the hair over the lesions fell out, the animals became emaciated, and death occurred between four and five weeks after inoculation. Cultures from these guinea-pigs were negative. The smears showed large numbers of acid-fast bacilli, the majority of which were intracellular. Three more guinea-pigs were inoculated in a similar manner and with similar results. The organisms were found not to be tubercle bacilli. In one set of experiments, the organisms were carried from pig to pig for three successive transfers. In only one instance was it possible, however, to reclaim the acid-fast organism by growing it in symbiosis with the amœba-cholera culture. Several monkeys were inoculated, all of which proved refractory. The guinea-pigs which were inoculated subcutaneously with a pure culture of the acid-fast organism developed lesions in some instances at the site of inoculation, which bore a certain resemblance to the leprous lesions of man both macroscopically and microscopically. The organisms were short, plump, acid-fast bacilli, occurring mostly in clumps. They grew readily, although slowly, in media which was 1 per cent: alkaline in phenolphthalein. It was noticed that repeated inoculations were necessary to obtain growths. These results were soon corroborated at the Leprosy Investigation Station of the United States Public Health and Marine Hospital Service at Honolulu, H. I.

Currie, Brinkerhoff, and Holman (*Public Health Reports*, 1910, xxv, No. 34) repeated Clegg's work on the cultivation of the leprosy bacillus and have also succeeded in obtaining growths of acid-fast organisms upon artificial media. These investigators pointed out additional factors which are not mentioned in Clegg's article and which are necessarty to insure successful results. The amœbæ must be active in order to obtain a pure symbiotic culture with the cholera vibrio. The agar slants must have a slight excess of condensation water, since the long period of incubation results in a considerable desiccation of the media. Before adding the leprosy material to the amœba-cholera culture the workers at Honolulu found that it was desirable to keep the amœba-cholera culture at 37° C. for five days in order to encourage the encystment of the amœbæ. Under these conditions the amœba were found to be far less phagocytic, and this inhibition of phagocytosis appears to be essential in order to prevent the digestion of the leprosy bacilli. Along somewhat similar lines, but with slightly modified technique, Duval, of New Orleans also obtained an acid-fast bacillus in pure cultures from leprosy material.

DUVAL (*Jour. Exper. Med.*, 1910, xii, 649 to 665) cultivated an acid-fast bacillus by growing it in a symbiotic culture of the amœba and typhoid bacillus. The agar was alkaline to the extent of 1 per cent., and the amœba-typhoid culture was grown at room temperature for forty-eight hours before the introduction of the leprosy material. After the acid-fast organisms had grown the typhoid bacillus was killed by a strong bacteriolytic serum and it was found that under these conditions the leprosy bacillus grew in symbiosis with the amœbæ. It was not possible to obtain growths of the leprosy bacillus in symbiosis with the typhoid bacillus alone. The amœba appears to be the essential factor. Duval also tried a medium containing tryptophan, cystin, and leucin (1 per cent. of each). His idea was to supply food for the leprosy bacilli analogous to that of the tissues. He used this medium on the surface of banana slants in order to promote oxidation. Agar slants were similarly treated with these substances and the amœba-leprosy culture grew both on the banana slants and agar slants under these conditions. According to Duval the optimum temperature of growth for the leprosy bacillus in artificial media appears to be between 32° and 35° C., and the presence of light is an important feature. The organisms thus obtained grew in subcultures and were acid-fast. They were proved not to be tubercle bacilli by inoculation experiments in guinea-pigs and rabbits. Inoculation experiments were successful in Japanese dancing mice. The earliest macroscopic changes appeared after four weeks as discreet glistening nodules, ½ mm. in diameter, and firmly attached to the serous surface of the peritoneal organs. Histological structures were the same as those in human lesions. Inoculations into the mice both with artificially cultivated organisms and from human cases of leprosy were successful, and it would appear that this successful direct inoculation helps to establish the identity of the organism in the artificial cultures. Duval's work differs in one respect materially from that of Clegg as well as Currie, Brinckerhoff, and Holman in that he found that his organisms grew best at 32° to 35° C., and that body temperature seriously inhibited or even prevented their growth. The other investigators, on the contrary, were always successful in obtaining growths at 37°. As the leprosy bacillus grows well in the human tissues, we would expect *a priori* that 37° C. would be its optimum temperature under conditions of artificial cultivation. The cultivation of the bacillus of leprosy has long been a stumbling block to the bacteriologist, but it now appears that we have at last the true solution of this crux. Of the hundreds of attempts to grow this organism in the past, that of Weil of the Pasteur Institute deserves special mention. He obtained one colony of an acid-fast organism upon rabbits' serum.